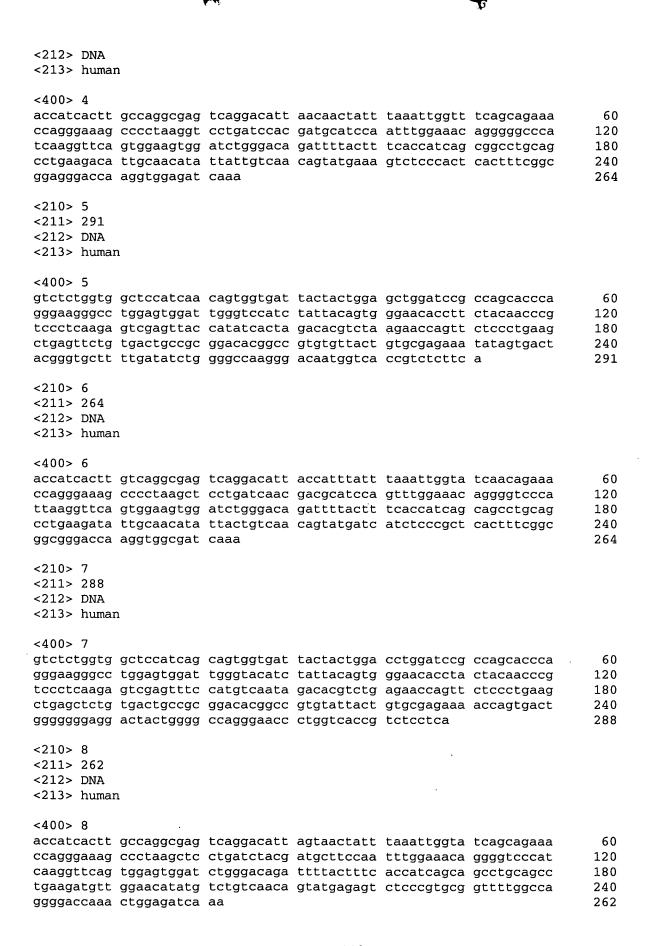<110> Jakobovits, Aya
     Yang, Xiao-Dong
     Gallo, Michael
     Jia, Xiao-Chi

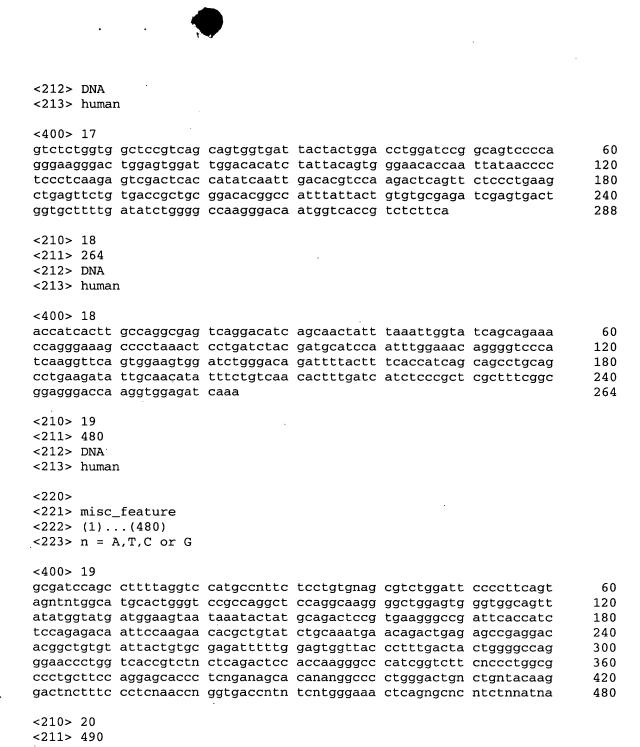<120> Human Monoclonal Antibodies to Epidermal
  Growth Factor Receptor

<130> Cell 4.20 CIP2

<140> 09/187,693
<141> 1998-11-05

<150> 09/162,280
<151> 1998-09-29

<150> 08/851,362
<151> 1997-05-05

<160> 75

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 22
<212> DNA
<213> human

<400> 1
caggtgcagc tggagcagtc gg   22

<210> 2
<211> 24
<212> DNA
<213> human

<400> 2
gctgagggag tagagtcctg agga   24

<210> 3
<211> 294
<212> DNA
<213> human

<400> 3
gtctctggtg gctccatcaa cagtggtgat tactactgga gctggatccg ccagcaccca   60
gggaagggcc tggactgcat tgggtacatc tattacagtg ggagcaccta ctacaacccg   120
tccctcaaga gtcgagttac catatcagta gacacgtcta agaatcagtt cttcctgaag   180
ctgacctctg tgactgccgc ggacacggcc gtgtattact gtgcgagatc tacggtggta   240
aatccggggt ggttcgaccc ctggggccar ggaaccctgg tcaccgtctc ctca   294

<210> 4
<211> 264

<212> DNA
<213> human

<400> 4
accatcactt gccaggcgag tcaggacatt aacaactatt taaattggtt tcagcagaaa   60
ccagggaaag cccctaaggt cctgatccac gatgcatcca atttggaaac aggggggccca   120
tcaaggttca gtggaagtgg atctgggaca gattttactt tcaccatcag cggcctgcag   180
cctgaagaca ttgcaacata ttattgtcaa cagtatgaaa gtctcccact cactttcggc   240
ggagggacca aggtggagat caaa   264

<210> 5
<211> 291
<212> DNA
<213> human

<400> 5
gtctctggtg gctccatcaa cagtggtgat tactactgga gctggatccg ccagcaccca   60
gggaagggcc tggagtggat tgggtccatc tattacagtg gaacacctt ctacaacccg   120
tccctcaaga gtcgagttac catatcacta gacacgtcta agaaccagtt ctccctgaag   180
ctgagttctg tgactgccgc ggacacggcc gtgtgttact gtgcgagaaa tatagtgact   240
acgggtgctt ttgatatctg gggccaaggg acaatggtca ccgtctcttc a   291

<210> 6
<211> 264
<212> DNA
<213> human

<400> 6
accatcactt gtcaggcgag tcaggacatt accatttatt taaattggta tcaacagaaa   60
ccagggaaag cccctaagct cctgatcaac gacgcatcca gtttggaaac aggggtccca   120
ttaaggttca gtggaagtgg atctgggaca gattttactt tcaccatcag cagcctgcag   180
cctgaagata ttgcaacata ttactgtcaa cagtatgatc atctcccgct cactttcggc   240
ggcgggacca aggtggcgat caaa   264

<210> 7
<211> 288
<212> DNA
<213> human

<400> 7
gtctctggtg gctccatcag cagtggtgat tactactgga cctggatccg ccagcaccca   60
gggaagggcc tggagtggat tgggtacatc tattacagtg gaacacctca ctacaacccg   120
tccctcaaga gtcgagtttc catgtcaata gacacgtctg agaaccagtt ctccctgaag   180
ctgagctctg tgactgccgc ggacacggcc gtgtattact gtgcgagaaa accagtgact   240
ggggggagg actactgggg ccagggaacc ctggtcaccg tctcctca   288

<210> 8
<211> 262
<212> DNA
<213> human

<400> 8
accatcactt gccaggcgag tcaggacatt agtaactatt taaattggta tcagcagaaa   60
ccagggaaag ccctaagctc ctgatctacg atgcttccaa tttggaaaca ggggtcccat   120
caaggttcag tggagtggat ctgggacaga ttttactttc accatcagca gcctgcagcc   180
tgaagatgtt ggaacatatg tctgtcaaca gtatgagagt ctcccgtgcg gttttggcca   240
ggggaccaaa ctggagatca aa   262

110

<210> 9
<211> 291
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(291)
<223> n = A,T,C or G

<400> 9
gtctctggtg gctccatcaa cagtggtgat ttctactgga gctggatccg ccaacaccca   60
gggaagggcc tggagtggat tgggtacatc tattacagtg ggagcaccta ctacaacccg   120
tccctcaaga gtcgagttac catgtcaata gacccgtcta agaaccagtt ctccctgaaa   180
ctgatctctg tgactgccgc ggacacggcc gtttattact gtgcgacntc cctttactat   240
ggcgggggta tggacgtctg gggccaaggg accacggtca ccgtctcctc a   .   291

<210> 10
<211> 264
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(264)
<223> n = A,T,C or G

<400> 10
accatcactt gccaggcgag tcaggacatt aacaactatt tgaattggta tcagcagagg   60
ccngggaacg cccctaaact cctgatctac gatgcatcca atttggaaac aggggtccca   120
tcaaggttca gtggaagtgg atctgggaca gatttttactt tcaccatcaa cagcctgcag   180
cctgaagata ttgcgacata ttattgtcaa cactatgatc atctcccgtg gacgttcggc   240
caagggacca aggtggaant caaa   264

<210> 11
<211> 291
<212> DNA
<213> human

<400> 11
gtctctggtg gctccatcaa caatggtgat tactactgga gctggatccg ccagcaccca   60
gggaagggcc tggagtggat tgggcacatc tattacagtg ggagcaccta ctacatcccg   120
tccctcaaga gtcgaactac catatcagta gacacgtcta agaaccagtt ctccctgaag   180
ctgaactctg tgactgccgc ggacacggcc gtgtattact gtgcgagagg gacagtaact   240
acgtactact ttgactactg gggccaggga accctggtca ccgtctcctc a   291

<210> 12
<211> 270
<212> DNA
<213> human

<400> 12
accatcactt gccgggcaag tcagagcatt,agcagctatt taaattggta tcagcagaaa   60
ccagggaaag cccctaagct cctgatctat gctgcatcca gtttgcaaag tggggtccca   120
tcaaggttca gtggcagtgg atctgggaca gatttcactc tcaccatcag cagtctgcaa   180
cctgaagatt ttgcaactta ctactgtcaa cagggttaca gaacccctcc ggagtgcagt   240

tttggccagg ggaccaagct ggagatcaaa   270

<210> 13
<211> 291
<212> DNA
<213> human

<400> 13
gtctctggtg gctccgtcag cagtggtgat tactactgga gctggatccg gcagccccca   60
gggaagggac tggagtggat tggacatctc tattacagtg ggaacaccaa ctacaacccc   120
tccctcaaga gtcgagtcac catatcatta gacacgtcca agaaccagtt ctccctgaag   180
ctgagctctg tgaccgctgc ggacacggcc gtgtattact gtgcgagaga tttttttgact   240
ggttccttct ttgactactg gggccaggga accctggtca ccgtctcctc a   291

<210> 14
<211> 264
<212> DNA
<213> human

<400> 14
accatcactt gccaggcgag tcaggacata agcaactatt taaattggta tcagcagaaa   60
ccagggaaag cccctaagct cctgatcaac gatgcatccg atttggaaac aggggtccca   120
tcaaggatca gtggaagtgg atctgggaca gattttactt tcaccatcag caacctgcag   180
cctgaagata ttgcaacata ttactgtcaa caatatgata gtctcccgct cactttcggc   240
ggagggacca aggtggagat caga   264

<210> 15
<211> 288
<212> DNA
<213> human

<400> 15
gtctctggtg gctccgtcta cagtggtgat tactactgga gctggatccg gcagccccc   60
gggaagggac tggagtggat tgggtatatc tattacagtg ggagcaccaa ttacaatccc   120
tccctcaaga gtcgagtcac catatcagta gacacgtcca agaaccagtt ctccctgaag   180
ctgagctctg tgaccgctgc ggacacggcc gtgtattact gtgcgagaga ctccatactg   240
ggagctacca actactgggg ccagggaacc ctggtcaccg tctcctca   288

<210> 16
<211> 264
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(264)
<223> n = A,T,C or G

<400> 16
accatcactt gccaggcgag tcnggacatt aataactatt tanattggtn tcagcagaaa   60
ccagggaaag cccctaaast cctgatctcc gatgcatcca atttagaaac aggggtccca   120
tcgaggttca gtggaagtgg atctgggaca gantntactt tcaccatcag cagcctgcag   180
cctgaagata ttgcnacata tcactgtcna cagtatnata gtctcccgct cactttcggc   240
ggagggacca aggtagagat caaa   264

<210> 17
<211> 288

<212> DNA
<213> human

<400> 17
gtctctggtg gctccgtcag cagtggtgat tactactgga cctggatccg gcagtcccca   60
gggaagggac tggagtggat tggacacatc tattacagtg gaacaccaa ttataaccc   120
tccctcaaga gtcgactcac catatcaatt gacacgtcca agactcagtt ctccctgaag   180
ctgagttctg tgaccgctgc ggacacggcc atttattact gtgtgcgaga tcgagtgact   240
ggtgctttg atatctgggg ccaagggaca atggtcaccg tctcttca   288

<210> 18
<211> 264
<212> DNA
<213> human

<400> 18
accatcactt gccaggcgag tcaggacatc agcaactatt taaattggta tcagcagaaa   60
ccagggaaag cccctaaact cctgatctac gatgcatcca atttggaaac aggggtccca   120
tcaaggttca gtggaagtgg atctgggaca gatttttactt tcaccatcag cagcctgcag   180
cctgaagata ttgcaacata tttctgtcaa cactttgatc atctcccgct cgctttcggc   240
ggagggacca aggtggagat caaa   264

<210> 19
<211> 480
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(480)
<223> n = A,T,C or G

<400> 19
gcgatccagc cttttaggtc catgccnttc tcctgtgnag cgtctggatt cccccttcagt   60
agntntggca tgcactgggt ccgccaggct ccaggcaagg ggctggagtg ggtggcagtt   120
atatggtatg atggaagtaa taaatactat gcagactccg tgaagggccg attcaccatc   180
tccagagaca attccaagaa cacgctgtat ctgcaaatga acagactgag agccgaggac   240
acggctgtgt attactgtgc gagattttg gagtggttac cctttgacta ctggggccag   300
ggaaccctgg tcaccgtctn ctcagactcc accaagggcc catcggtctt cnccctggcg   360
ccctgcttcc aggagcaccc tcnganagca cananggccc ctgggactgn ctgntacaag   420
gactnctttc cctcnaaccn ggtgaccntn tcntgggaaa ctcagngcnc ntctnnatna   480

<210> 20
<211> 490
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(490)
<223> n = A,T,C or G

<400> 20
cggaaccttt nggttcgcnc cttttggagn cagacccanc atcacttgtc gggcgagtca   60
gggcattagc aattttttag cctggtttca gcagaaacca gggatagccc ctaagtccct   120
gatctatgct gcatccactt tgcaaagtgg ggtcccatca aagttcaccg gcagtggata   180
tgggacagat ttcactctca ccatcagcag cctgcagcct gaagactttg caacttatta   240

113

```
ttgtcaacaa tataatgttt acccattcac tttcggccct gggaccaaag tggatatcaa      300
acgaactgtg gctgcaccat ctgtcttcat cttcccgcca tctgatgagc aagttgaaat      360
ctggaactgc ctctgttgtg tgcctgctga ataacttcta tcccagagag gccaaagtac      420
agtggaaggt ggataacgcc ncnnttggcg gnntcctttc nctcncccnt cctcnncccn      480
cctctcncna                                                            490
```

<210> 21
<211> 449
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(449)
<223> n = A,T,C or G

<400> 21
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aagcctgttg cctcagtgca ggtctcctgc aaggcttctg gatacacctt caccagttat       60
gatatcaact gggtgcgaca ggccactgga caagggcttg agtggatggg atggatgaac      120
cctaacagtg gtaacacagg ctatgcacag aagttccagg gcagagtcac catgaccagg      180
aacacctcca taagcacagc ctacatggag ctgagcagcc tgagatctga ggacacggcc      240
gtgtattact gtgcgagagg aggcccctat agcagtggct ggaccttctt tgactactgg      300
ggccagggaa ccctggtcac cgtctcctca gccctncacc aagggcccat cggtcttccc      360
cctggcgccc tgctccagga gcacctccga gagcacagcg nncccttggg ctgcctggnn      420
caaggactct ttccccnaac cccggntga                                        449
```

<210> 22
<211> 460
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(460)
<223> n = A,T,C or G

<400> 22
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tttgaaccct tcntggccgt gtctctnggc gcgagggcca ccatcaactg caagtccagc       60
cagcgtgttt tatacanctc caacaataag aactgcttag cttggtacca gcagaaacca      120
ggacagcctc ctaagctgct catttactgg acatctaccc gggaatccgg ggtccctgcc      180
cgattcagtg gcagcgggtc tgggacagat ttcactctca ccatcagcag cctgcaggct      240
gaagatgtgg cagtttatta ctgtcagcaa tattatagta ctccactcac tttcggcgga      300
gggaccatgg tggagatcaa gcgaactgtg gctgcaccat ctgtcttcat cttcccgcca      360
tctgatgagc cngtntgaaa tctggaactg cctctgtttg tgtgccctgc tgaataactt      420
ctatcccaga gaggccaaag taccagtgga aggtggataa                            460
```

<210> 23
<211> 465
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(465)
<223> n = A,T,C or G

<400> 23

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cngcctgtta ggtccntgcg actctcctgt gcagcgtctg gattcatctt cagtagctat          60
ggcatgcact gggtccgcca ggctccaggc aaggggctgg agtgggtggc aattatatgg         120
tatgatggaa gtaataaata ctatgcagac tccgtgaagg gccgattcac catctccaga         180
gacaattcca agaacacgct gtatctgcaa atgaacagcc tgagagccga ggacacggct         240
gtgtattact gtgcgagaga cggggggcca cggtggtttc tcgcttctga ctactggggc         300
cagggaaccc tggtcaccgt ctcctcagcc tccaccaagg gcccatcggt cttccccctg         360
gcgccctgct ccaggagcac ccttcgagag cacagcggcc ctgggctgcc tggttcaagg         420
actactttcc ccgaaccggt gacggtgtnc gttggaactc atgac                         465
```

```
<210> 24
<211> 456
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(456)
<223> n = A,T,C or G

<400> 24
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agtctccaga ctccctggtt gtgtctctgg gcgagagggc caccatcaac tgcaagtcca          60
gncagagtat tttatacagc tccaacaatc aaaaacttct tagcttggta ccagcagaaa         120
ccaggacagc ctccgaagtt gctcatttac tgggcatcta ttcgggaatc cggggtccct         180
gaccgattca gtggcagcgg gtctgggaca gatttcactc tcaccatcag cagcctgcag         240
gctgaagatg tggcagttta ttactgtcag cagtattata gtattccgtg cactttggc          300
caggggacca agctggagat caaacgaact gtggctgcac catctgtctt catcttcccg         360
ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc         420
tatcccagaa aggccaaagt acatgaaggg ttcaaa                                    456
```

```
<210> 25
<211> 532
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(532)
<223> n = A,T,C or G

<400> 25
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```
ggcgtggycc agcctgkgag gtccctgaga ctctcctgtg cagcgtctgg attcaycttc          60
agtarctatg gcatgcactg ggtccgccag gctccaggca aggggctgga gtgggtggca         120
attatatggt atgatggaag tagcaaatac tatgcagact ccgtgaaggg ccgattcacc         180
atctccagag acaattccaa gaacacgctg tatctgcaaa tgaacagcct gagagccgag         240
gacacggctg tgtattactg tgcgagagac ggggggccac ggtggtttct cgcttctgac         300
tactggggcc agggaaccct ggtcaccgtc tcctcagcct ccaccaaggg cccatcggtc         360
ttcccctgg cgccctgctc caggagcacc ttccgagagc acagcggccc tgggctgcct         420
ggtcaaggac tacttccccg aamcggtgac ggtgtcgtgg aactcaggcg ctctgaccag         480
nggcgtgcac aattcccagc ngtcctnaag gttgaaatcg taanggttca aa                  532
```

```
<210> 26
<211> 463
<212> DNA
<213> human

<220>
<221> misc_feature
```

115

<400> 26
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actcagtctc cagactccct ggctgtgtct ctgggcgaga gggccaccat caactgcaag      60
tccagccaga gtgtttttata cggctccaag aatcagaact acttagcttg gtaccagcag     120
aaaccaggac agcctcctaa gctgctcatt tactgggcat ctacccggga atccggggtc     180
cctgaccgat tcaggggcag cgggtctagg acagatttca ctctcaccat cagcagcctg     240
caggctgaag atgtggcagt ttacttctgt caccaatatt atagtactcc gtggacgttc     300
ggccaaggga ccaaggtgga aatcaaacga actgtggctg caccatctgt cttcatcttc     360
ccgccatctg atgagcagtt gaaatctgga actgcctctg ttgtgtgcct gctgaataac     420
ttgtatccca gaaagccaag gacacgaaag gtcanaccna ccc                       463
```

<210> 27
<211> 417
<212> DNA
<213> human

<220>
<221> misc_feature

<400> 27
```
cgtgatccnc ctggntggtc cctgagactc tcctgtgcag cgtctggatt catcttcant      60
aactattnca tgcactgggt ccgccaggct ccaggcaagg ggctggagtg ggtggcaatt     120
atatggtatg atggaagtag caaatactat gcagactccg ngaagggccg attcaccatc     180
tccagagaca attccaagaa cacgctgtat ctgcaaatga acagcctgag agccgaggac     240
acggctgatg tattactgtg cgagagacgg ttgggccacg gtggcttctc gcttctgact     300
actggngcnc agggcaacnc tgnctnaccg tnttcctcan ccctntacnc aagggccncc     360
attnggtctt tccccccctgg nnnncctgct cnatgnnnca ccctncgaca ncnacan       417
```

<210> 28
<211> 453
<212> DNA
<213> human

<220>
<221> misc_feature

<400> 28
```
ttcgtggctg tgtctcttgg cgagaggncc accatcaact gcaagtccag ccagagtatt      60
ttatacagct ccaacaatca aaacttctta gcttggtacc agcagaaacc aggacagcct     120
ccgaagttgc tcatttactg ggcatctatt cgggaatccg gggtccctga ccgattcagt     180
ggcagcgggt ctgggacaga tttcactctc accatcagca gcctgcaggc tgaagatgtg     240
gcagtttatt actgtcagca gtattatagt attccgtgca cttttggcca ggggaccaag     300
ctggagatca aacgaactgt ggctgcacca tctgtcttca tcttcccgcc atctgatgag     360
ccaagnttga aaatctggaa ctgcctctgt tgtgtgccct gcttgaataa cttctatccc     420
agagnggcc aaagtccngt ggaaggtgga tac                                   453
```

<210> 29
<211> 349
<212> DNA
<213> human

116

<220>
<221> misc_feature
<222> (1)...(349)
<223> n = A,T,C or G

<400> 29
ctcacctgca ctgtctctgg tggctccatc agtagttact nttggagntg gatccggcag   60
cccgnaggga agggactgga gtggattggg tgtttctatt acagngggag caccaactac   120
aacccctccc tnaagagtca tgtcaccata tcagtagaca cgtccaagaa ccagttctac   180
ntgaagctga gctntgtgac cgntgcggac acggncgnga ataactgngc nagagatagg   240
ggagnaggnn ntggcntnct actntgacta ctgaggccag ngaaccntgg ntcacagtaa   300
tccntaagnc tnncaancaa angngnccca angnganacn tnnctncnc   349

<210> 30
<211> 476
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(476)
<223> n = A,T,C or G

<400> 30
tctttggtag cgngtcttgg cgagaggccc accatcaact gcaagtccag ccagagtgtt   60
ttatacngct ccaagaatca gaactactta gcttggtacc agcagaaacc aggacagcct   120
cctaagctgc tcatttactg ggcatctacc cgggaatccg gggtccctga ccgattcagg   180
ggcagcgggt ctaggacaga tttcactctc accatcagca gcctgcaggc tgaagatgtg   240
gcagtttact tctgtcacca atattatagt actccgtgga cgttcggcca agggaccaag   300
gtggaaatca aacgaactgt ggctgcacca tctgtcttca tcttcccgcc atctgatgag   360
caccttgaaa ttctggaact gcctctgntg ngtgcctgct gaacnaactc tatccccaga   420
ganggcccaa aagtntcaag nnggnnaggc nngataacgc ctnttcnccn ncntnc   476

<210> 31
<211> 471
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(471)
<223> n = A,T,C or G

<400> 31
aagccttttc agaccntgcc cttcacctgc actgtctctg gtggctccat cagcagttnt   60
ggttactact ggagctggat ccgccagcac ccagggaagg gcctggagtg gattgggtac   120
atctataaca gtgggagcac ctactacaac ccgtccctcc agagtcgagt taccatatca   180
gtagacacgt ctaagaacca gttctccctg aagctgagct ctgtgactgc cgcggacacg   240
gccgtgtatt actgtgcggg tcagaaatgg tcctactact actactacgg tatggacgtc   300
tggggccaag ggaccacggt caccgtctcc tnagcctcca ccaanggccc atcggtcttc   360
cccctggcgc cctgntctag gagcacctcc canagcacag acggatnctg ggcctgcctg   420
natcaatgga ctactttccc cgaaccggtt gnntgtgnnn cctggnaact n   471

<210> 32
<211> 456
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(456)
<223> n = A,T,C or G

<400> 32
aagcctttng agaccntgcc cctcacctgc actgtctctg gtggctccat cagtaattac   60
tactggagct ggatccggca gcccccaggg aagggactgg agtggattgg gtatatctat   120
tacagtggga gcaccaacta caacccctcc ctcaagagtc gagtcaccat atcagtagac   180
acgtccaaga accagttctc cctgaagctg agctctgtga ccgctgcgga cacggccgtg   240
tattactgtg cgagagggcc cggggggagc tactactact acggtatgga cgtctggggc   300
caagggacca cggtcaccgt ctcctcagcc tccaccaagg gcccatcggt cttccccctg   360
gcgccctgct ccaggagcac ctccgagagc acagcggccc tgggctgcct gggtcaagga   420
ctacttcccc gaaccggtga cggtgttcgn nggaac   456

<210> 33
<211> 394
<212> DNA
<213> human

<400> 33
ctgtctgcat ctgtaggaga cagagtcata atcacttgcc gggcaagtca aaacatcacc   60
gaccatttaa attggtatca gcagatagca ggaaaagccc ctaggcccct gatatacact   120
gcatccagtt tgcaaggtgg ggtcccatca aggttcagtg cagtggatc tgggacagat   180
ttcactctca ccatcagcag tctgcaacct gaagattttt caacttacta ctgtcaacag   240
agttacagta ccccgtgcag ttttggccag gggaccaagc tggagatcaa acgaactgtg   300
gctgcaccat ctgtcttcat cttcccgcca tctgatgagc agttgaaatc tggaactgcc   360
tctgttgtgt gcctgctgaa taacttctat ccca   394

<210> 34
<211> 310
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (1)...(310)
<223> n = A,T,C or G

<400> 34
gtgaaggtct cctgcaaggc ttctggatac accttcagcg gctactatat gcactgggtg   60
cgacaggccc ctggacaagg gcttgagtgg atgggatcga tccaccctaa cagtggtggc   120
anaaactttg cacagaagtt tcagggcagg gtcaccatga ccagggacac gtccatcaac   180
acagcctact tggagctgag caggctgaga tctgacgaca cggccgtgta ttactgtgcg   240
agagataaaa actacggtga ctacgtcttt gactattggg gccagggaac cctggtcacc   300
gtctcctcag   310

<210> 35
<211> 76
<212> PRT
<213> human

<400> 35
Val Ser Gly Gly Ser Ile Ser Ser Gly Gly Tyr Tyr Trp Ser Trp Ile
1   5   10   15
Arg Gln His Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Tyr

```
                20                      25                      30
Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Ile
         35                      40  .                   45
Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val
      50                      55                      60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg
65                      70                      75


<210> 36
<211> 76
<212> PRT
<213> human


<400> 36
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn Trp
 1               5                   10                      15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Asp Ala
         20                      25                      30
Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
         35                      40                      45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile
      50                      55                      60
Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Asn Leu Pro
65                      70                      75


<210> 37
<211> 76
<212> PRT
<213> human


<400> 37
Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Tyr Leu Asn Trp
 1               5                   10                      15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Ala Ala
         20                      25                      30
Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
         35                      40                      45
Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe
      50                      55                      60
Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro
65                      70                      75


<210> 38
<211> 76
<212> PRT
<213> human


<400> 38
Val Ser Gly Gly Ser Val Ser Ser Gly Ser Tyr Tyr Trp Ser Trp Ile
 1               5                   10                      15
Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Tyr
         20                      25                      30
Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Ile
         35                      40                      45
Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val
      50                      55                      60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg
```

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<210> 39
<211> 100
<212> PRT
<213> human

<400> 39
Val Ser Gly Gly Ser Ile Asn Ser Gly Asp Tyr Tyr Trp Ser Trp Ile
1   5   10   15
Arg Gln·His Pro Gly Lys Gly Leu Asp Cys Ile Gly Tyr Ile Tyr Tyr
            20   25   30
Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Ile
            35   40   45
Ser Val Asp Thr Ser Lys Asn Gln Phe Phe Leu Lys Leu Thr Ser Val
    50   55   60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Thr Val Val
65   70   75   80
Ala Ser Asn Pro Gly Trp Phe Asp Pro Trp Gly Gln Gly Thr Leu Val
                85   90   95
Thr Val Ser Ser
            100

<210> 40
<211> 105
<212> PRT
<213> human

<400> 40
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Asn Asn Tyr Leu Asn Trp
1   5   10   15
Phe Gln Gln Lys Pro Gly Lys Ala Pro Lys Val Leu Ile His Asp Ala
            20   25   30
Ser Asn Leu Glu Thr Gly Gly Pro Ser Arg Phe Ser Gly Ser Gly Ser
            35   40   45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Gly Leu Gln Pro Glu Asp Ile
    50   55   60
Ala Thr Tyr Tyr Cys Gln Gln Tyr Glu Ser Leu Pro Leu Thr Phe Gly
65   70   75   80
Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val
            85   90   95
Phe Ile Phe Pro Pro Ser Asp Glu Gln
            100   105

<210> 41
<211> 97
<212> PRT
<213> human

<400> 41
Val Ser Gly Gly Ser Ile Asn Ser Gly Asp Tyr Tyr Trp Ser Trp Ile
1   5   10   15
Arg Gln His Pro Gly Lys Gly Leu Glu Trp Ile Gly Ser Ile Tyr Tyr
            20   25   30
Ser Gly Asn Thr Phe Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Ile
            35   40   45
Ser Leu Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val

```
                50                    55                    60
Thr Ala Ala Asp Thr Ala Val Cys Tyr Cys Ala Arg Asn Ile Val Thr
65                    70                    75                    80
Thr Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser
                    85                    90                    95
Ser


<210> 42
<211> 105
<212> PRT
<213> human

<400> 42
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Thr Ile Tyr Leu Asn Trp
 1               5                    10                   15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Asn Asp Ala
                20                   25                   30
Ser Ser Leu Glu Thr Gly Val Pro Leu Arg Phe Ser Gly Ser Gly Ser
            35                   40                   45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile
        50                   55                   60
Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp His Leu Pro Leu Thr Phe Gly
65                   70                   75                   80
Gly Gly Thr Lys Val Ala Ile Lys Arg Thr Val Ala Ala Pro Ser Val
                85                   90                   95
Phe Ile Phe Pro Pro Ser Asp Glu Gln
            100                  105


<210> 43
<211> 96
<212> PRT
<213> human

<400> 43
Val Ser Gly Gly Ser Ile Ser Ser Gly Asp Tyr Tyr Trp Thr Trp Ile
 1               5                    10                   15
Arg Gln His Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Tyr
                20                   25                   30
Ser Gly Asn Thr Tyr Tyr Asn Pro Ser Leu Lys Ser Arg Val Ser Met
            35                   40                   45
Ser Ile Asp Thr Ser Glu Asn Gln Phe Ser Leu Lys Leu Ser Ser Val
        50                   55                   60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Lys Pro Val Thr
65                   70                   75                   80
Gly Gly Glu Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
                85                   90                   95


<210> 44
<211> 105
<212> PRT
<213> human

<400> 44
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn Trp
 1               5                    10                   15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Asp Ala
```

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Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
        35   40   45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile
    50   55   60
Val Gly Tyr Tyr Val Gln Gln Tyr Glu Ser Leu Pro Cys Gly Phe Gly
65   70   75   80
Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val
                    85   90   95
Phe Ile Phe Pro Pro Ser Asp Glu Gln
            100   105

<210> 45
<211> 97
<212> PRT
<213> human

<400> 45
Val Ser Gly Gly Ser Ile Asn Ser Gly Asp Phe Tyr Trp Ser Trp Ile
1   5   10   15
Arg Gln His Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Tyr
            20   25   30
Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Met
        35   40   45
Ser Ile Asp Pro Ser Lys Asn Gln Phe Ser Leu Lys Leu Ile Ser Val
    50   55   60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Thr Ser Leu Tyr Tyr
65   70   75   80
Gly Gly Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser
                    85   90   95
Ser

<210> 46
<211> 105
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(105)
<223> Xaa = Any Amino Acid

<400> 46
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Asn Leu Asn Trp
1   5   10   15
Tyr Gln Gln Lys Arg Gly Asn Ala Pro Lys Leu Leu Ile Tyr Asp Ala
            20   25   30
Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
        35   40   45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Asn Leu Gln Pro Glu Asp Ile
    50   55   60
Ala Thr Tyr Tyr Cys Gln His Tyr Asp His Leu Pro Trp Thr Phe Gly
65   70   75   80
Gln Gly Thr Lys Val Glu Xaa Lys Arg Thr Val Ala Ala Pro Ser Val
                    85   90   95
Phe Ile Phe Pro Pro Ser Asp Glu Gln

<210> 47
<211> 97
<212> PRT
<213> human

<400> 47
Val Ser Gly Gly Ser Ile Asn Asn Gly Asp Tyr Tyr Trp Ser Trp Ile
1   5   10   15
Arg Gln His Pro Gly Lys Gly Leu Glu Trp Ile Gly His Ile Tyr Tyr
            20   25   30
Ser Gly Ser Thr Tyr Tyr Ile Pro Ser Leu Lys Ser Arg Thr Thr Ile
        35   40   45
Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Asn Ser Val
    50   55   60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Thr Val Thr
65   70   75   80
Thr Tyr Tyr Phe Asp Tyr Trp Gly Gln Gly Thr Thr Val Thr Val Ser
                85   90   95
Ser

<210> 48
<211> 107
<212> PRT
<213> human

<400> 48
Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Tyr Leu Asn Trp
1   5   10   15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Ala Ala
            20   25   30
Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
        35   40   45
Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe
    50   55   60
Ala Thr Tyr Tyr Cys Gln Gln Gly Tyr Arg Thr Pro Pro Glu Cys Ser
65   70   75   80
Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala Pro
                85   90   95
Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
                100   105

<210> 49
<211> 97
<212> PRT
<213> human

<400> 49
Val Ser Gly Gly Ser Val Ser Ser Gly Asp Tyr Tyr Trp Ser Trp Ile
1   5   10   15
Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Gly His Leu Tyr Tyr
            20   25   30
Ser Gly Asn Thr Asn Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Ile
        35   40   45
Ser Leu Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val

123

```
              50                    55                    60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Phe Leu Thr
65                    70                    75                    80
Gly Ser Phe Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
                     85                    90                    95
Ser


<210> 50
<211> 105
<212> PRT
<213> human

<400> 50
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn Trp
 1                    5                    10                    15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Asn Asp Ala
                20                    25                    30
Ser Asp Leu Glu Thr Gly Val Pro Ser Arg Ile Ser Gly Ser Gly Ser
           35                    40                    45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Asn Leu Gln Pro Glu Asp Ile
      50                    55                    60
Ala Thr Tyr Tyr Cys Gln Gln Tyr Asp Ser Leu Pro Leu Thr Phe Gly
65                    70                    75                    80
Gly Gly Thr Lys Val Glu Ile Arg Arg Thr Val Ala Ala Pro Ser Val
                85                    90                    95
Phe Ile Phe Pro Pro Ser Asp Glu Gln
                100                   105

<210> 51
<211> 96
<212> PRT
<213> human

<400> 51
Val Ser Gly Gly Ser Val Tyr Ser Gly Asp Tyr Tyr Trp Ser Trp Ile
 1                    5                    10                    15
Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Tyr
                20                    25                    30
Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Ile
           35                    40                    45
Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val
      50                    55                    60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Ser Ile Leu
65                    70                    75                    80
Gly Ala Thr Asn Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
                85                    90                    95

<210> 52
<211> 105
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(105)
<223> Xaa = Any Amino Acid
```

<400> 52
Thr Ile Thr Cys Gln Ala Ser Gln Xaa Ile Ser Asn Tyr Leu Xaa Trp
1   5   10   15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Xaa Leu Ile Ser Asp Ala
            20   25   30
Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
        35   40   45
Gly Thr Xaa Xaa Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile
    50   55   60
Ala Thr Tyr His Cys Xaa Gln Tyr Xaa Ser Leu Pro Leu Thr Phe Gly
65   70   75   80
Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val
            85   90   95
Phe Ile Phe Pro Pro Ser Asp Glu Gln
            100   105

<210> 53
<211> 95
<212> PRT
<213> human

<400> 53
Val Ser Gly Gly Ser Val Ser Ser Gly Asp Tyr Tyr Trp Thr Trp Ile
1   5   10   15
Arg Gln Ser Pro Gly Lys Gly Leu Glu Trp Ile Gly His Ile Tyr Tyr
            20   25   30
Ser Gly Asn Thr Asn Tyr Asn Pro Ser Leu Lys Ser Arg Leu Thr Ile
        35   40   45
Ser Ile Asp Thr Ser Lys Thr Gln Phe Ser Leu Lys Leu Ser Ser Val
    50   55   60
Thr Ala Ala Asp Thr Ala Ile Tyr Tyr Cys Val Arg Asp Arg Val Thr
65   70   75   80
Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val Thr Ser Ser
            85   90   95

<210> 54
<211> 105
<212> PRT
<213> human

<400> 54
Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn Trp
1   5   10   15
Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Asp Ala
            20   25   30
Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser
        35   40   45
Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile
    50   55   60
Ala Thr Tyr Phe Cys Gln His Phe Asp His Leu Pro Leu Ala Phe Gly
65   70   75   80
Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val
            85   90   95
Phe Ile Phe Pro Pro Ser Asp Glu Gln
            100   105

<210> 55
<211> 160
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(160)
<223> Xaa = Any Amino Acid

<400> 55
Ala Ile Gln Pro Phe Arg Ser Met Pro Phe Ser Cys Xaa Ala Ser Gly
1   5   10   15
Phe Pro Phe Ser Xaa Xaa Gly Met His Trp Val Arg Gln Ala Pro Gly
            20   25   30
Lys Gly Leu Glu Trp Val Ala Val Ile Trp Tyr Asp Gly Ser Asn Lys
        35   40   45
Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn
    50   55   60
Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Arg Leu Arg Ala Glu Asp
65   70   75   80
Thr Ala Val Tyr Tyr Cys Ala Arg Phe Leu Glu Trp Leu Pro Phe Asp
                85   90   95
Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Xaa Ser Asp Ser Thr Lys
            100   105   110
Gly Pro Ser Val Phe Xaa Leu Ala Pro Cys Phe Gln Glu His Pro Xaa
        115   120   125
Xaa Ala Xaa Xaa Ala Pro Gly Thr Xaa Xaa Tyr Lys Asp Xaa Phe Pro
    130   135   140
Ser Asn Xaa Val Thr Xaa Ser Trp Glu Thr Gln Xaa Xaa Ser Xaa Xaa
145   150   155   160

<210> 56
<211> 161
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(161)
<223> Xaa = Any Amino Acid

<400> 56
Gly Thr Phe Xaa Phe Ala Pro Phe Gly Xaa Arg Pro Xaa Ile Thr Cys
1   5   10   15
Arg Ala Ser Gln Gly Ile Ser Asn Phe Leu Ala Trp Phe Gln Gln Lys
            20   25   30
Pro Gly Ile Ala Pro Lys Ser Leu Ile Tyr Ala Ala Ser Thr Leu Gln
        35   40   45
Ser Gly Val Pro Ser Lys Phe Thr Gly Ser Gly Tyr Gly Thr Asp Phe
    50   55   60
Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr
65   70   75   80
Cys Gln Gln Tyr Asn Val Tyr Pro Phe Thr Phe Gly Pro Gly Thr Lys
                85   90   95
Val Asp Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro
            100   105   110

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```
Pro Ser Asp Glu Pro Val Glu Ile Trp Asn Cys Leu Cys Cys Val Pro
        115                 120                 125
Ala Glu Leu Leu Ser Gln Arg Gly Gln Ser Thr Val Glu Gly Gly Arg
        130                 135                 140
Xaa Xaa Trp Arg Xaa Pro Phe Xaa Xaa Pro Ser Ser Xaa Xaa Leu Ser
145                 150                 155                 160
Xaa
```

<210> 57
<211> 149
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(149)
<223> Xaa = Any Amino Acid

<400> 57
```
Lys Pro Val Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr
 1               5                   10                  15
Phe Thr Ser Tyr Asp Ile Asn Trp Val Arg Gln Ala Thr Gly Gln Gly
            20                  25                  30
Leu Glu Trp Met Gly Trp Met Asn Pro Asn Ser Gly Asn Thr Gly Tyr
        35                  40                  45
Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asn Thr Ser Ile
    50                  55                  60
Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala
65                  70                  75                  80
Val Tyr Tyr Cys Ala Arg Gly Gly Pro Tyr Ser Ser Gly Trp Thr Phe
                85                  90                  95
Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Leu
            100                 105                 110
His Gln Gly Pro Ile Gly Leu Pro Pro Gly Ala Leu Leu Gln Glu His
        115                 120                 125
Leu Pro Glu His Xaa Xaa Pro Leu Gly Cys Leu Xaa Gln Gly Leu Phe
    130                 135                 140
Pro Xaa Thr Pro Xaa
145
```

<210> 58
<211> 151
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(151)
<223> Xaa = Any Amino Acid

<400> 58
```
Phe Glu Pro Phe Xaa Ala Val Ser Leu Gly Ala Arg Ala Thr Ile Asn
 1               5                   10                  15
Cys Lys Ser Ser Gln Arg Val Leu Tyr Xaa Ser Asn Asn Lys Asn Cys
            20                  25                  30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile
```

127

```
          35                    40                    45
Tyr Trp Thr Ser Thr Arg Glu Ser Gly Val Pro Ala Arg Phe Ser Gly
    50                    55                    60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala
65                    70                    75                    80
Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Tyr Tyr Ser Thr Pro Leu
                  85                    90                    95
Thr Phe Gly Gly Gly Thr Met Val Glu Ile Lys Arg Thr Val Ala Ala
              100                   105                   110
Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Pro Val Asn Leu Glu
          115                   120                   125
Leu Pro Leu Phe Val Cys Pro Ala Glu Leu Leu Ser Gln Arg Gly Gln
      130                   135                   140
Ser Thr Ser Gly Arg Trp Ile
145                   150
```

<210> 59
<211> 155
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(155)
<223> Xaa = Any Amino Acid

<400> 59
```
Xaa Pro Val Arg Ser Xaa Arg Leu Ser Cys Ala Ala Ser Gly Phe Ile
  1             5                  10                    15
Phe Ser Xaa Tyr Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly
          20                    25                    30
Leu Glu Trp Val Ala Ile Ile Trp Tyr Asp Gly Ser Asn Lys Tyr Tyr
          35                    40                    45
Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys
      50                    55                    60
Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala
65                    70                    75                    80
Val Tyr Tyr Cys Ala Arg Asp Gly Gly Pro Arg Trp Phe Leu Ala Ser
              85                    90                    95
Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr
              100                   105                   110
Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Leu
          115                   120                   125
Arg Glu His Ser Gly Pro Gly Leu Pro Gly Ser Arg Thr Thr Phe Pro
      130                   135                   140
Glu Pro Val Thr Val Xaa Val Gly Thr His Asp
145                   150                   155
```

<210> 60
<211> 152
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(152)
<223> Xaa = Any Amino Acid

128

<400> 60

```
Ser Leu Gln Thr Pro Trp Leu Cys Leu Trp Ala Arg Gly Pro Pro Ser
1               5                   10                  15
Thr Ala Ser Pro Xaa Arg Val Phe Tyr Thr Ala Pro Thr Ile Lys Asn
            20                  25                  30
Phe Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu
        35                  40                  45
Ile Tyr Trp Ala Ser Ile Arg Glu Ser Gly Val Pro Asp Arg Phe Ser
    50                  55                  60
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln
65                  70                  75                  80
Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln Tyr Tyr Ser Ile Pro
            85                  90                  95
Cys Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala
            100                 105                 110
Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser
        115                 120                 125
Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Lys
        130                 135                 140
Ala Lys Val His Glu Gly Phe Lys
145                 150
```

<210> 61
<211> 177
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(177)
<223> Xaa = Any Amino Acid

<400> 61

```
Gly Val Xaa Gln Pro Xaa Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser
1               5                   10                  15
Gly Phe Xaa Phe Ser Xaa Tyr Gly Met His Trp Val Arg Gln Ala Pro
            20                  25                  30
Gly Lys Gly Leu Glu Trp Val Ala Ile Ile Trp Tyr Asp Gly Ser Ser
        35                  40                  45
Lys Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
    50                  55                  60
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65                  70                  75                  80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Gly Gly Pro Arg Trp Phe
            85                  90                  95
Leu Ala Ser Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        100                 105                 110
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
        115                 120                 125
Ser Thr Phe Arg Glu His Ser Gly Pro Gly Leu Pro Gly Gln Gly Leu
        130                 135                 140
Leu Pro Arg Xaa Gly Asp Gly Val Val Glu Leu Arg Arg Ser Asp Gln
145                 150                 155                 160
Xaa Arg Ala Gln Phe Pro Ala Val Leu Lys Val Glu Ile Val Xaa Val
            165                 170                 175
Gln
```

<210> 62
<211> 153
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(153)
<223> Xaa = Any Amino Acid

<400> 62
```
Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly Glu Arg Ala Thr
 1               5                  10                  15
Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Gly Ser Lys Asn Gln
            20                  25                  30
Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu
        35                  40                  45
Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe
    50                  55                  60
Arg Gly Ser Gly Ser Arg Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65                  70                  75                  80
Gln Ala Glu Asp Val Ala Val Tyr Phe Cys His Gln Tyr Tyr Ser Thr
                85                  90                  95
Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val
            100                 105                 110
Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys
        115                 120                 125
Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Leu Tyr Arg Lys
        130                 135                 140
Pro Arg Thr Arg Lys Val Xaa Pro Thr
145                 150
```

<210> 63
<211> 139
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(139)
<223> Xaa = Any Amino Acid

<400> 63
```
Arg Asp Pro Pro Gly Trp Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 1               5                  10                  15
Phe Ile Phe Xaa Asn Tyr Xaa Met His Trp Val Arg Gln Ala Pro Gly
            20                  25                  30
Lys Gly Leu Glu Trp Val Ala Ile Ile Trp Tyr Asp Gly Ser Ser Lys
        35                  40                  45
Tyr Tyr Ala Asp Ser Xaa Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn
    50                  55                  60
Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp
65                  70                  75                  80
Thr Ala Asp Val Leu Leu Cys Glu Arg Arg Leu Gly His Gly Gly Phe
                85                  90                  95
```

130

```
Ser Leu Leu Thr Thr Gly Ala Gln Gly Asn Xaa Xaa Xaa Pro Xaa Ser
            100                     105                 110
Ser Xaa Leu Tyr Xaa Arg Ala Xaa Ile Xaa Ser Phe Pro Pro Gly Xaa
        115                 120                 125
Pro Ala Xaa Xaa Xaa Thr Leu Arg Xaa Xaa Xaa
    130             135
```

<210> 64
<211> 151
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(151)
<223> Xaa = Any Amino Acid

<400> 64
```
Phe Val Ala Val Ser Leu Gly Glu Arg Xaa Thr Ile Asn Cys Lys Ser
 1               5                   10                  15
Ser Gln Ser Ile Leu Tyr Ser Ser Asn Asn Gln Asn Phe Leu Ala Trp
            20                  25                  30
Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala
        35                  40                  45
Ser Ile Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser
        50                  55                  60
Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val
65                  70                  75                  80
Ala Val Tyr Tyr Cys Gln Gln Tyr Tyr Ser Ile Pro Cys Thr Phe Gly
                85                  90                  95
Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val
            100                 105                 110
Phe Ile Phe Pro Pro Ser Asp Glu Pro Xaa Leu Lys Ile Trp Asn Cys
        115                 120                 125
Leu Cys Cys Val Pro Cys Leu Asn Asn Phe Tyr Pro Arg Xaa Gly Gln
    130             135                 140
Ser Pro Val Glu Gly Gly Tyr
145                 150
```

<210> 65
<211> 116
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(116)
<223> Xaa = Any Amino Acid

<400> 65
```
Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr Xaa Trp Xaa
 1               5                   10                  15
Trp Ile Arg Gln Pro Xaa Gly Lys Gly Leu Glu Trp Ile Gly Cys Phe
            20                  25                  30
Tyr Tyr Xaa Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser His Val
            35                  40                  45
Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Tyr Xaa Lys Leu Ser
```

131

```
                50                      55                      60
Xaa Val Thr Xaa Ala Asp Thr Xaa Xaa Asn Asn Xaa Ala Arg Asp Arg
65                      70                      75                      80
Gly Xaa Val Xaa Trp Xaa Xaa Thr Xaa Thr Thr Glu Ala Xaa Glu Pro
                85                      90                      95
Trp Xaa Thr Val Ile Xaa Lys Xaa Xaa Xaa Gln Xaa Xaa Pro Xaa Xaa
                100                     105                     110
Xaa Xaa Xaa Xaa
        115


<210> 66
<211> 159·
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(159)
<223> Xaa = Any Amino Acid

<400> 66
Ser Leu Val Ala Xaa Leu Gly Glu Arg Pro Thr Ile Asn Cys Lys Ser
  1                   5                  10                      15
Ser Gln Ser Val Leu Tyr Xaa Ser Lys Asn Gln Asn Tyr Leu Ala Trp
                20                      25                      30
Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala
            35                      40                      45
Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Arg Gly Ser Gly Ser
        50                      55                      60
Arg Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu Asp Val
65                      70                      75                      80
Ala Leu Ala Val Tyr Phe Cys His Gln Tyr Tyr Ser Thr Pro Trp Thr
                85                      90                      95
Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro
                100                     105                     110
Ser Val Phe Ile Phe Pro Pro Ser Asp Glu His Leu Glu Ile Leu Glu
            115                     120                     125
Leu Pro Leu Xaa Xaa Ala Cys Thr Asn Ser Ile Pro Arg Xaa Gly Pro
        130                     135                     140
Lys Val Ser Xaa Xaa Xaa Gly Xaa Ile Thr Pro Xaa Xaa Xaa Xaa
145                     150                     155


<210> 67
<211> 157
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(157)
<223> Xaa = Any Amino Acid

<400> 67
Lys Pro Phe Gln Thr Xaa Pro Phe Thr Cys Thr Val Ser Gly Gly Ser
  1                   5                  10                      15
Ile Ser Ser Gly Gly Tyr Tyr Trp Ser Trp Ile Arg Gln His Pro Gly
            20                      25                      30
```

132

Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Asn Ser Gly Ser Thr Tyr
        35   40   45
Tyr Asn Pro Ser Leu Gln Ser Arg Val Thr Ile Ser Val Asp Thr Ser
    50   55   60
Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr
65   70   75   80
Ala Val Tyr Tyr Cys Ala Gly Gln Lys Trp Ser Tyr Tyr Tyr Tyr Tyr
                85   90   95
Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Xaa Ala
            100   105   110
Ser Thr Xaa Gly Pro Ser Val Phe Pro Leu Ala Pro Xaa Ser Arg Ser
        115   120   125
Thr Ser Xaa Ser Thr Asp Gly Xaa Trp Ala Cys Leu Xaa Gln Trp Thr
        130   135   140
Thr Phe Pro Glu Pro Val Xaa Cys Xaa Xaa Trp Xaa Leu
145   150   155

<210> 68
<211> 152
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(152)
<223> Xaa = Any Amino Acid

<400> 68
Lys Pro Xaa Glu Thr Xaa Pro Leu Thr Cys Thr Val Ser Gly Gly Ser
 1   5   10   15
Ile Ser Asn Tyr Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly
            20   25   30
Leu Glu Trp Ile Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn
        35   40   45
Pro Ser Leu Lys Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn
    50   55   60
Gln Phe Ser Leu Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val
65   70   75   80
Tyr Tyr Cys Ala Arg Gly Pro Gly Gly Ser Tyr Tyr Tyr Tyr Gly Met
                85   90   95
Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr
            100   105   110
Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser
            115   120   125
Glu Ser Thr Ala Ala Leu Gly Cys Leu Gly Gln Gly Leu Leu Pro Arg
        130   135   140
Thr Gly Asp Gly Val Arg Xaa Asn
145   150

<210> 69
<211> 131
<212> PRT
<213> human

<400> 69
Leu Ser Ala Ser Val Gly Asp Arg Val Ile Ile Thr Cys Arg Ala Ser
 1   5   10   15

133

Gln Asn Ile Thr Asp His Leu Asn Trp Tyr Gln Gln Ile Ala Gly Lys
        20   25   30
Ala Pro Arg Pro Leu Ile Tyr Thr Ala Ser Ser Leu Gln Gly Gly Val
        35   40   45
Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
        50   55   60
Ile Ser Ser Leu Gln Pro Glu Asp Phe Ser Thr Tyr Tyr Cys Gln Gln
65   70   75   80
Ser Tyr Ser Thr Pro Cys Ser Phe Gly Gln Gly Thr Lys Leu Glu Ile
                85   90   95
Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
            100   105   110
Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn
        115   120   125
Phe Tyr Pro
        130

<210> 70
<211> 103
<212> PRT
<213> human

<220>
<221> VARIANT
<222> (1)...(103)
<223> Xaa = Any Amino Acid

<400> 70
Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Ser Gly Tyr Tyr
 1   · 5   10   15
Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly
        20   25   30
Ser Ile His Pro Asn Ser Gly Gly Xaa Asn Phe Ala Gln Lys Phe Gln
        35   40   45
Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile Asn Thr Ala Tyr Leu
        50   55   60
Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala
65   70   75   80
Arg Asp Lys Asn Tyr Gly Asp Tyr Val Phe Asp Tyr Trp Gly Gln Gly
                85   90   95
Thr Leu Val Thr Val Ser Ser
            100

<210> 71
<211> 5
<212> DNA
<213> human

<400> 71
tatac   5

<210> 72
<211> 5
<212> DNA
<213> human

<400> 72

<210> 73
<211> 21
<212> PRT
<213> human

<400> 73
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Pro Leu Ala Pro Cys Ser
 1   5   10   15
Arg Ser Thr Ser Thr
            20

<210> 74
<211> 17
<212> PRT
<213> human

<400> 74
Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
 1   5   10   15
Gln

<210> 75
<211> 120
<212> PRT
<213> human

<400> 75
Val Ser Gly Gly Ser Ile Ser Ser Gly Cys Tyr Tyr Trp Ser Trp Ile
 1   5   10   15
Arg Gln His Pro Gly Lys Gly Leu Glu Trp Ile Gly Tyr Ile Tyr Asn
            20   25   30
Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Gln Ser Arg Val Thr Ile
            35   40   45
Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser Val
            50   55   60
Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Gly Lys Trp Ser Tyr
65   70   75   80
Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr
                85   90   95
Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Pro Leu Ala
            100   105   110
Pro Cys Ser Arg Ser Thr Ser Thr
            115   120